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ABSTRACT

The purpose of this study was to determine the needs related to nutrition education in the state of Hawaii. Twenty-four-hour diet recalls were obtained from 932 students in grades 5, 8, and 11. Larger percentages of older children than younger children reported diets poor in nutritional quality. Cholesterol intake of males increased with age and was higher than the intake of females. The mean intakes of sodium among junior and senior high females were within the recommended range, but the average intake in other groups exceeded the recommendation. Candy was a major contributor of sugar in the diets of teenage girls, whereas soft drinks accounted for a substantial portion of the sugar consumed by teenage boys. The energy value of between-meal snacks increased dramatically with age. Senior high students consumed nearly 40 percent of their total energy intake as snacks. Ethnic differences in food intake were also noted. Additional data were collected from teachers, parents, community agencies, school administrators, nurses, food service managers, and food service workers. That part of the needs assessment yielded additional "unhealthy" findings. These results provide a firm basis for development of nutrition education curricula oriented toward the specific needs of the target population. (BW)

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Summary of the Hawai'i Nutrition Education Needs Assessment

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TM 840 535

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Objectives

The purpose of this study was to determine the needs related to nutrition education in the State of Hawai'i. Results are to be used as input for the design of curricula and training for food service managers, food service workers, school children, classroom teachers, school administrators, and parents.

Method

24-hour diet recalls were obtained from a Statewide stratified random sample of 932 students from grades 5, 8, and 11. Of the diet recalls collected, 42 were eliminated from the analysis because of obvious incompleteness or insufficient specificity of the reported data.

Ethnicity categories included the eight most populous groups in Hawai'i: Caucasian, Japanese, Hawaiian, Filipino, Chinese, Samoan, Korean, and Black plus a provision for "other." Data on age, sex, and date of diet recall were also collected for each student.

RESULTS

Nutrient Analysis

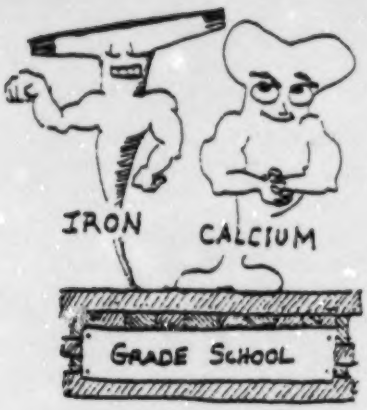
In general, larger percentages of older children than younger children, especially females, reported diets poor in nutritional quality (see Table 1). Large proportions of all age and sex groups reported consumption of less than two-thirds of the RDA for vitamin A, thiamin and calcium, and, to a lesser extent, niacin and vitamin C. Risk of iron deficiency was particularly high among junior and senior high school students.

Table 1: Percentage of students below two-thirds of the RDA for each of 9 nutrients

Nutrient	Elementary		Junior High		Senior High	
	Male (n=170)	Female (n=159)	Male (n=145)	Female (n=137)	Male (n=164)	Female (n=115)
Protein	0%	1%	1%	3%	3%	6%
Vitamin A	35	42	56	57	40	59
Thiamin	32	40	39	36	33	37
Riboflavin	8	14	9	16	15	21
Niacin	20	31	23	28	18	28
Vitamin C	25	27	37	35	32	33
Calcium	22	29	40	66	38	70
Phosphorus	4	16	9	26	16	32
Iron	9	13	49	73	38	77

Cholesterol, sodium, and sugar intake

Cholesterol intake of males increased at each age level and were higher



Students, particularly females, at the junior and senior high level had low intakes of calcium and iron.

than the intakes of females. The mean intakes of sodium shown in Table 2 among junior and senior high females were within the recommended range, but the average intake in other groups exceeded the recommendation. Candy was a major contributor of sugar in the diets of teenage girls whereas soft drinks accounted for a substantial portion of the sugar consumed by teenage boys.

Table 2: Daily intake (mean ± SD) of cholesterol, sodium, and sugar

	Cholesterol	Sodium	Sugar[2]
	Mean ± SD (mg)	Mean ± SD (mg)	Mean ± SD (g)
Elementary			
Males (170)	388 ± 305	2.4 ± 1.6	44 ± 56
Females (159)	325 ± 213	2.1 ± 1.1	41 ± 38
Junior high			
Males (145)	466 ± 282	3.0 ± 2.2	61 ± 56
Females (137)	310 ± 225	2.2 ± 1.4	58 ± 55
Senior high			
Males (164)	535 ± 393	3.2 ± 2.2	70 ± 70
Females (115)	297 ± 171	2.5 ± 4.0	57 ± 52

[1]The number of respondents per group is given in parentheses.

[2]Sugar sources included table sugar, candy, soft drinks, syrups, icings, honey, and gelatin deserts. Sugar found in cereals, breads, or canned foods was not included.

Senior high males compared to other age-sex groups have the highest consumption of soda, the equivalent of 365 (12-ounce) cans per year.

Ethnic differences

Young children who identified themselves as Hawaiian and older children who identified themselves as Caucasian reported food intakes that were higher than average in percentage of energy from fat. Children of Asian and Polynesian ancestry reported low calcium intake, and children of Japanese ancestry reported low vitamin A intake.

Snacks

Among elementary students, snacks were roughly equivalent to another meal. Junior and senior high school students consumed nearly the same amount of energy at breakfast, lunch, and dinner as did the elementary school students. However, the energy value of snacks increased dramatically with age. On the average, senior high school students consumed nearly 40% of their total energy intake as between-meal snacks.

For older students, snacks contributed a greater proportion of calories.

Other results

In addition to the diet recall, data were collected, mainly by means of questionnaires, cognitive test items, and interviews, from teachers, parents, community agencies, school administrators, and nurses, food service managers, and food service workers. That part of the needs assessment yielded additional "unhealthy" findings.

All respondent groups performed poorly on test items on basic nutrition. Similarly all groups revealed hardly any training in nutrition; furthermore, three-fourths of the most frequently used nutrition materials were more than 10 years old.

Students attitudes toward the school lunch program became more negative as the children grew older. Parents often could not accurately state how often their child ate the school lunch. A more severe communication/articulation problem exists among professional staff at the school level.

On the "healthy" side, all respondents indicated a strong interest in nutrition and how to improve it. Students had a positive attitude about food and its relationship to good health. Elementary grade students as a group had fairly decent diets.

Discussion

This study provides a firm basis for development of nutrition education curricula oriented toward the specific needs of the target population. The identification of specific problem areas for particular groups of children makes possible nutrition education that is potentially more effective than would be the case if all children were simply given general instruction in nutrition. Since a nutrition education program should promote behavior change, baseline food behavior information is essential. The study provided not only information on the most critical general areas where improvement is needed but also the extent to which individuals have specific deficiencies.

To a curriculum developer, the results of the study show that differences in dietary intake among age groups necessitate a curriculum designed sequentially to meet the needs of children as they grow older. The differences in intake by sex indicate that the curriculum must address the separate concerns of male and female students. Furthermore, the evidence of ethnic influences on dietary intake supports the need for a curriculum unique to the population mix in Hawai'i.

The needs assessment not only has shown that nutrition education is necessary but also has provided information for development of content addressing the specific needs of the population.